
**Safety devices for protection against
excessive pressure —**

Part 3:

**Safety valves and bursting disc safety
devices in combination**

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*Dispositifs de sécurité pour protection contre les pressions
excessives —*

*Partie 3: Soupapes de sûreté et dispositifs de sûreté à disque de
rupture en combinaison*

ISO 4126-3:2006

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4126-3 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 69, *Industrial valves*, ISO/TC 185, *Safety devices for protection against excessive pressure*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 4126-3 cancels and replaces ISO 6718:1991, of which it constitutes a technical revision.

ISO 4126 consists of the following parts, under the general title *Safety devices for protection against excessive pressure*:

- *Part 1: Safety valves*
- *Part 2: Bursting disc safety devices*
- *Part 3: Safety valves and bursting disc safety devices in combination*
- *Part 4: Pilot-operated safety valves*
- *Part 5: Controlled safety pressure relief systems (CSPRS)*
- *Part 6: Application, selection and installation of bursting disc safety devices*
- *Part 7: Common data*
- *Part 9: Application and installation of safety devices excluding stand-alone bursting disc safety devices*

Part 7 contains data which is common to more than one of the parts of this standard to avoid unnecessary repetition.

Introduction

Bursting disc safety devices can be used in conjunction with safety valves in following cases:

- a) to protect the safety valve against corrosion, fouling or operating conditions which could affect the safety valve performance;
- b) to prevent leakage;
- c) to prevent total loss of contents from the protected equipment following the bursting of the bursting disc.

The term *combination* is used to describe the close-coupled (i.e. within 5 pipe diameters) assembly of a bursting disc safety device with a safety valve or CSPRS, as defined by this part of ISO 4126. In some cases, the bursting disc safety device and the safety valve or CSPRS are connected together to form the combination by a short length of pipe or a spool piece.

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Safety devices for protection against excessive pressure —

Part 3:

Safety valves and bursting disc safety devices in combination

1 Scope

This part of ISO 4126 specifies the requirements for a product assembled from the in-series combination of safety valves or CSPRS (controlled safety pressure relief systems) according to ISO 4126-1, ISO 4126-4 and ISO 4126-5, and bursting disc safety devices according to ISO 4126-2 installed within no more than five pipe diameters from the valve inlet. It specifies the design, application and marking requirements for such products, which are used to protect pressure vessels, piping or other enclosures from excessive pressure, and which comprise the bursting disc safety device, a safety valve or CSPRS and, where applicable, a short length of connecting pipe or spool piece. In addition, it gives a method for establishing the combination discharge factor used in sizing combinations.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4126-1:2004, *Safety devices for protection against excessive pressure — Part 1: Safety valves*

ISO 4126-2:2003, *Safety devices for protection against excessive pressure — Part 2: Bursting disc safety devices*

ISO 4126-4:2004, *Safety devices for protection against excessive pressure — Part 4: Pilot-operated safety valves*

ISO 4126-5:2004, *Safety devices for protection against excessive pressure — Part 5: Controlled safety pressure relief systems (CSPRS)*

ISO 4126-6:2003, *Safety devices for protection against excessive pressure — Part 6: Application, selection and installation of bursting disc safety devices*

EN 764-7:2002, *Pressure equipment — Part 7: Safety systems for unfired pressure equipment*

EN 13480-1:2002, *Metallic industrial piping — Part 1: General*

EN 13480-2:2002, *Metallic industrial piping — Part 2: Materials*

EN 13480-3:2002, *Metallic industrial piping — Part 3: Design and calculation*

EN 13480-4:2002, *Metallic industrial piping — Part 4: Fabrication and installation*

EN 13480-5:2002, *Metallic industrial piping — Part 5: Inspection and testing*

EN 13480-6:2002, *Metallic industrial piping — Part 6: Additional requirements for buried piping*

CEN/TR 13480-7:2002, *Metallic industrial piping — Part 7: Guidance on the use of conformity assessment procedures*

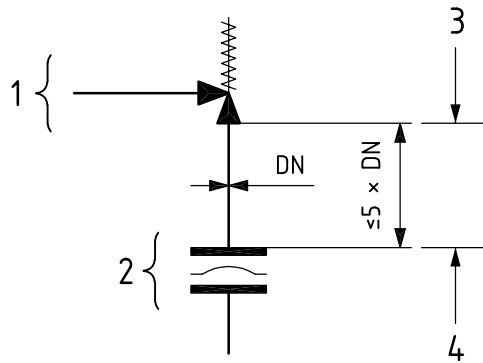
3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 combination

installation which comprises a bursting disc safety device installed within five pipe diameters (from outlet of bursting disc holder to inlet of valve) before the inlet of a safety valve or a CSPRS

See Figure 1.



Key

- 1 safety valve or CSPRS
- 2 bursting disc safety device
- 3 safety valve or CSPRS inlet
- 4 bursting disc safety device outlet

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NOTE Other bursting disc safety device configurations used in conjunction with safety valves or CSPRS are specified in ISO 4126-6.

Figure 1 — Diagram of combination showing relative distance

3.2 combination discharge capacity factor

F_d
factor used to determine the discharge capacity of a safety valve or CSPRS when the safety valve or CSPRS is used in combination with a bursting disc safety device installed upstream of the safety valve or CSPRS

3.3 flow resistance factor

K_r
factor which determines the resistance to flow in a pipe work system caused by the presence therein of a burst bursting disc, forming part of a bursting disc safety device, installed in the system

NOTE Its symbol, K_r , is a dimensionless factor expressed as the velocity head loss.

3.4 bursting disc safety device

non-reclosing pressure relief device actuated by differential pressure and designed to function by the bursting of the bursting disc(s)

NOTE It is the complete assembly of installed components including, where appropriate, the bursting disc holder.

3.5**bursting disc assembly**

complete assembly of the components installed in the bursting disc holder to perform the desired function

3.6**bursting disc**

pressure-containing and pressure-sensitive component of a bursting disc safety device

3.7**bursting disc holder**

part of a bursting disc safety device that retains the bursting disc assembly in position

3.8**specified bursting pressure**

bursting pressure quoted with a coincident temperature when defining the bursting disc requirements

NOTE It is used in conjunction with a **performance tolerance** (3.11).

3.9**specified maximum bursting pressure**

maximum bursting pressure quoted with the coincident temperature when defining the bursting disc requirements

NOTE It is used in conjunction with a **specified minimum bursting pressure** (3.10).

3.10**specified minimum bursting pressure**

minimum bursting pressure quoted with the coincident temperature when defining the bursting disc requirements

NOTE It is used in conjunction with a **specified maximum bursting pressure** (3.9).

3.11**performance tolerance**

range of pressure between the specified minimum bursting pressure and the specified maximum bursting pressure or the range of pressure in positive and negative percentages or quantities which is related to the specified bursting pressure

3.12**operating pressure**

pressure existing at normal operating conditions within the system being protected

3.13**relieving pressure**

maximum pressure under discharge conditions in the pressurized system

NOTE It may differ from the bursting pressure of the bursting disc.

3.14**bursting disc safety device discharge area**

minimum cross-sectional flow area of the bursting disc safety device, taking into consideration the possible reduction of the cross-section by, for example, back pressure supports, catching devices or parts of the bursting disc which remain after bursting

3.15**batch**

quantity of bursting discs or bursting disc safety devices made as a single group of the same type, size, materials and specified bursting pressure requirements, and where the bursting discs are manufactured from the same lot of material